# Today's Plan:

***Learning Target (standard)***: I will divide polynomials.

***Students will***: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

***Teacher will***: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

***Assessment***: Board work, homework check and homework assignment

***Differentiation***: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

## p.124 #64-108 (by 4)

$64) 4x^5 - 16x^4 + 15x^3 - 4x^2 + 28x - 45$

$68) 2a^3 + 7a^2 - 43a + 42$

$72) x^{2n} - 2x^{2n}y^n - 2x^n y^{2n} + 4x^n y^n + 3y^{2n}$

$76) 9x^2 - 4$

$80) x^4 - 6x^2 + 9$

$84) 25x^2 - 49y^2$

$88) a^{2n} + 10a^n b^n + 25b^{2n}$

$92) x^2 - 10x + 25$

$96) a^2 - 25b^2$

$100) 4x^4 - 12x^2y^2 + 9y^4$

$104) 16b^{2n} - 24b^n + 9$

$108) a^{2n} - 2a^n b^n + b^{2n}$

Simplify.

$$2y-3\left[y-2y\left(y-3\right)+4y\right]$$

$2y-3[y-2y^2+6y+4y]$

$2y-3[-2y^2+11y]$

$2y+6y^2-33y$

$6y^2-31y$

Simplify.

$$\left(x^n-4\right)\left(x^n-5\right)$$

$x^{2n}-5x^n-4x^n+20$

$x^{2n}-9x^n+20$

Simplify.

$$(3x^n + y^{2n})(x^n + 2y^{3n})$$

$$3x^{2n} + 6x^n y^{3n} + x^n y^{2n} + 2y^{5n}$$

Simplify.

$$(2b^3 + 4)(3b^4 - 6b^2 - 4)$$

$$6b^7 - 12b^5 - 8b^3 + 12b^4 - 24b^2 - 16$$

$$6b^7 - 12b^5 + 12b^4 - 8b^3 - 24b - 16$$

Simplify.

$(3a^2+4)^2$

$(3a^2+4)(3a^2+4)$

$9a^4+12a^2+12a^2+16$

$9a^4+24a^2+16$

## Division of Polynomials:

- There are two methods for dividing polynomials
  - Long division is set up just like the division of numbers
  - Synthetic division is a shorter method of dividing a polynomial by a binomial of the form *x-a*. This method uses only the coefficients of the variable terms.
- Both methods require that the divisor and the dividend be in descending order
- Both methods require a "holding" place for "missing" terms

$x^5-3x^2+1$

$x^5+0x^4+0x^3-3x^2+0x+1$

## Long Division:

$$\left(6x^2+13x+8\right)\div\left(2x+1\right)$$

$$3x+5+\frac{3}{2x+1}$$

$$\begin{array}{r} 3x+5 \\ 2x+1\overline{)\,6x^2+13x+8} \\ -6x^2\mp 3x \\ \hline 10x+8 \\ -10x\mp 5 \\ \hline 3 \end{array}$$

## Long Division:

$$\frac{2-3x^2+5x^3}{x^2+3} = \frac{5x^3-3x^2+0x+2}{x^2+3}$$

$$\begin{array}{r} 5x-3 \\ x^2+3\overline{)\,5x^3-3x^2+0x+2} \\ -5x^3\mp 15x \\ \hline -3x^2-15x+2 \\ +3x^2\quad +9 \\ \hline -15x+11 \end{array}$$

$$5x-3+\frac{-15x+11}{x^2+3}$$

Long Division:

$$\frac{8x^3-9}{2x-3} = \frac{8x^3+0x^2+0x-9}{2x-3}$$

$$2x-3 \overline{)\, 8x^3+0x^2+0x-9}$$

$4x^2+6x+9$

$-8x^3+12x^2$

$12x^2+0x-9$

$-12x^2+18x$

$18x-9$

$-18x+27$

$18$

$$4x^2+6x+9+\frac{18}{2x-3}$$

Assignment:

p.130 #2-24 even